

CLUB NEWS



Brandon Silvester

Charlie Rowell

January 5 Meeting

by Linda Stewart & Sue Bottom

Welcome and Thanks.

President Tom Sullivan opened the meeting at 6:50 pm with 35 attendees and informed us that SAOS members had sanitized the tables and chairs prior to the meeting. He then thanked Lady Di for organizing coffee and treats and reminded members to “drop a dollar” to help defray the

costs. Jim Roberts of Florida SunCoast Orchids hosted the sales and raffle tables with his great hybrids.

Club Business. Sue Bottom thanked Linda Stewart and Dottie Sullivan for all their volunteer work, greeting guests and members at the Welcome Table and collecting membership dues for 2021. The Tamiami Orchid Show has been postponed until October, but Frank Smith is hosting the first Apopka International Orchid Show at his nursery, Krull-Smith orchids, on January 16 and 17. Repotting clinics are resuming in February, and we’ll have the full complement of potting supplies at our meetings.

Linda welcomed our guest Susan and two new members, Teresa Bragg and Betty Feher. Free raffle tickets were given to our guest, new members and those with birthdays in January.

Our librarian Howard Cushnir noted that we have many books in our library. He recommended that members explore the library pages on the SAOS website and request a book or the light meter, and he will bring them to the next meeting. He noted we have the new edition of Martin Motes Florida Orchid Growing book, and brought several fictional orchid books for those interested in some easy reading.

SAOS Program. We had programs by two of our SAOS orchid growers. First up was Charlie Rowell, a native of South Florida, who has found NE Florida a bit more challenging for growing orchids, mainly due to the lower winter temperatures. He



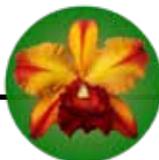
now grows mostly the hardier varieties, with his growing techniques continually changing in adaptation to his current growing environment. He is always adding seedlings and smaller plants to his collection, purging those that don’t do well, and finding that his growing methods continue to develop and change.

Charlie has no bench space, so his growing space takes advantage of every vertical space available. He grows on mounts, in baskets and pots with little medium. His current favorite way of growing orchids is mounted on pecky cypress. Charlie likes the fact that you can see the roots should a problem start to develop, there is no need for regular repotting, they are pest resistant, rot resistant, very hard to over-water, and most importantly, he likes the way that they look. The pecky cypress is lightweight and tends to have a very slow rate of breakdown, which is definitely a plus for those of us who grow on wooden rafts, only to find that the raft is rotting away just when the orchid is reaching its full glory. Sometimes it can take years for that orchid to “forgive” us for having repotted and/or remounted it.

Pecky cypress is formed as the result of a fungal infection in older, mature cypress trees. When harvested, the wood is full of small holes, perfect for the orchid roots. Charlie’s current source for pecky cypress is a sawmill located in N. Jacksonville (Florida Cypress, 1226 Wigmore Street, Jax 32206). They offer scrap cypress by the pound to the public on Saturdays from 8 am to 1 pm. It is always a good idea to call ahead (904) 353-3001 to ensure availability.



Continued on page 3



CLUB NEWS



Upcoming Orchid Events

January 2020

- 8-10 Fort Lauderdale Orchid Society Show
CANCELLED
- 9 Florida North-Central AOS Judging, 1 pm
Clermont Judging Ctr, 849 West Ave.
- 12 JOS Meeting, Encyclias, 7 pm
Speaker Marv Ragan
Mandarin Garden Club
- 15-17 Tamiami International Orchid Festival
Dade County Fair Expo Center
POSTPONED TIL OCTOBER
- 16-17 The Apopka Intl Winter Orchid Festival
Krull Smith Nursery
2800 West Ponkan Rd, Apopka 32712
- 30-31 Florida West Coast Orchid Society Show
Seminole Recreation Division

February

- 2 SAOS Meeting, 6:30 pm
Jim Roberts, Florida SunCoast Orchids
Encyclias and their Hybrids
- 6 SAOS Repotting Clinic, 9 am til noon
Behind the Memorial Lutheran Church
3375 US 1 South, St. Aug 32086
- 6-7 Venice Area Orchid Society Show?
Venice Community Center
CANCELLED
- 9 JOS Meeting, Topic TBA, 7 pm
Speaker TBA
Mandarin Garden Club
- 12-13 South Carolina Orchid Society Show?
Riverbanks Zoo&Botanical Garden
West Columbia, SC
- 12-14 Port Saint Lucie Orchid Society Show
Port St. Lucie Community Center
CANCELLED
- 13 Florida North-Central AOS Judging, 1 pm
Clermont Judging Ctr, 849 West Ave.
- 13-14 Boca Raton Orchid Society Show
Safe Schools Institute
CANCELLED

- 27-28 Orchid Society of Highlands County Show
Agri-Civic Center, Sebring
- 27-28 Naples Orchid Society Show?
Moorings Presbyterian Church

March

- 2 SAOS Meeting, 6:30 pm
Bulbophyllums
Linda Stewart, SAOS
- 5-7 Martin County Orchid Society Show?
Martin County Fairgrounds
- 6 SAOS Repotting Clinic, 9 am til noon
Behind the Memorial Lutheran Church
3375 US 1 South, St. Aug 32086
- 6-7 Tampa Bay Orchid Society Show
Tampa Scottish Rite Masonic Center
- 9 JOS Meeting, Show Update, 7 pm

St. Augustine Orchid Society Organization

President	Tom Sullivan tomjs91@gmail.com
Vice President Communications	Janis Croft croftie1984@gmail.com
Vice President Events	Dianne Batchelder ladydi9907@aol.com
Vice President Membership	Linda Stewart lindstew@hotmail.com
Vice President Programs	Sue Bottom sbottom15@gmail.com
Treasurer	Bill Gourley wgourley@bellsouth.net
Directors at Large	Bob Schimmel, 2019 schimmelr55@bellsouth.net Cathy Mayo, 2020 allatoonalady@gmail.com Charlie Rowell, 2021 charlierowell75@gmail.com
Exhibit Committee Chair	Janis Croft croftie1984@gmail.com
Librarian	Howard Cushnir hscushnir@gmail.com
Newsletter Editors Webmasters	Sue and Terry Bottom sbottom15@gmail.com bottom406@gmail.com



CLUB NEWS

Continued from page 1

Charlie creates his mounts by simply cutting the wood to size, drilling a hole near the top, and inserting the hanging wire. How easy is that! Charlie also makes homemade cork mounts. Having access to an overabundance of corks from his employer, he decided to experiment with wire cages filled with corks (and sometimes some potting medium, clay pebbles, and/or a little sphagnum) using only a pair of needle nosed pliers and a wire cutter to construct. As the organic material rots away over time, the orchid roots gladly fill in the empty spaces. This is a perfect example of how orchid enthusiasts continue to develop and grow to adapt to their current environment while continuing to grow and enjoy this wonderful hobby.



Next up was Brandon Silvester, who has grown orchids in the various locations his job has taken him from San Antonio, through Georgia and now Jacksonville. He grows indoors under lights and has experimented with various set ups learning much along the way.

Those that grow using natural light know that the light intensity increases from dawn to noon and then decreases until sunset, while under light growers have a constant light intensity from the time the lights are turned on until they are turned off, and there are no cloudy days. Orchid books often cite optimum light levels, say 2500 to 3500 ft candles for cattleyas, but these references are to the maximum midday light level. If you supplied this bright light for 12 to 14 hours, your orchids will become bleached and shriveled, as Brandon quickly learned during his experimentations. As a general rule, you can supply perhaps up to half the 'recommended' light levels, but always best to start lower and gradually increase levels based on your observations of the plants' responses.

Brandon gave some general suggestions for light levels for various types of orchids. Light intensity as low as 400

to 600 foot candles is suggested for the lower light orchids like phals, paphs, bulbos and oncidiums, with higher 1000 to 2000 foot candles for cattleyas, dendrobiums and ascocentrums to as much as 1000 to 3500 foot candles for catasetums and cymbidiums. Brandon tried higher light levels in an effort to maximize blooming, and showed pictures of the plants response to excessive light. The new leaves were actually smaller and smaller as the plants shrunk from the light, with plants turning red from anthocyanin pigment production then yellow and white as the chlorophyll was bleached from the leaves. He then showed pictures of the plants recovering after he lowered the light intensity, with the plants obviously happier. He recommends double-checking light levels with a light meter or phone app, but always use your powers of observation to guide you.

Some of the challenges with indoor growing include maintaining buoyant air movement and the proper humidity, particularly during the summer when the air conditioning is running. Humidity levels around 70% is great for orchids, but difficult to maintain indoors. He shoots for 50 to 60% humidity using a humidifier, although he cautions frequent cleaning to prevent bacterial/fungal growth. Other methods can be used like humidity trays, grouping plants together, or tenting the growing area. The dry indoor air seems to encourage spider mite infections, so constant vigilance is required to spot and eradicate problems. Of course, pest control indoors is problematic because you are limited to home remedies involving soaps, oils and alcohols for pest control, because the heavy duty chemicals are too dangerous to apply indoors.

Simple shop light fixtures with LED bulbs are widely available at the big box stores. There is quite a market for high tech horticultural lighting for the cannabis growers, although these very high intensity lights can easily be too much for your orchids.

Brandon's presentation contains a lot of information and great references for those that want to learn more about growing under lights. You can enter the Science Zone and learn all about photosynthetically active radiation, photosynthetic photon flux density and daily light integrals.

Both Charlie and Brandon's presentations were thoroughly enjoyable and will be uploaded to the website on the [2021 newsletter page](#). Watch for more local grower articles in the months to come.

Meeting Conclusion. Following a refreshment break, the winners of the Silent Auction and Raffle tables were announced. The delightful evening concluded at 8:30 pm. Thanks to all who assisted with cleanup after the meeting!

Link to meeting photos: <https://flic.kr/s/aHsmTub8GK>



CLUB NEWS



Florence Powers

November 4, 1923 – November 15, 2020

Florence departed this earthly existence at the ripe old age of 97. She was a descendent of the original founders of St. Augustine and was a longtime member of St. Augustine's Easter Festival royal family serving as Queen Mariana in 1970. Florence was an active member of the Poinsettia Chapter of St. Augustine Garden Club winning top honors on her floral designs. At one time, she was certified as a national flower show judge. Her husband grew orchids and Florence started taking care of his orchids in his memory becoming an orchid collector in her own right. She was a St. Augustine Orchid Society member for many years. Florence was a little spark plug, with lots of stories. She will be missed!

American Orchid Society Corner

Webinars

January 7, 8:30 pm, Everyone Invited
Greenhouse Chat Orchid, Q&A - Ron McHatton
January 13, 8:30 pm, AOS Members Only
Mounting Orchids – Michael Coronada, RF

Orchids Magazine this month:

Bulbophyllum Sestochilus – Charles Wilson
Leaf Spotting Fungi by Sue Bottom
Paphiopedilum tranlienianum by Olaf Gruss

Photos of Latest AOS Awards



Renew Your Membership

We'll be collecting dues for 2021 from now through March. Dues are \$20 for an individual and \$30 for a family. You can mail your membership check to SAOS c/o Linda Stewart, 1812 Diana Drive, Palatka 32177. If you prefer to renew your membership online, you can use the PayPal link on our [website](#). Easy Peasy!



February 2 Monthly Meeting

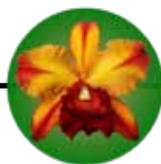
Encyclias and Epicatts

Jim Roberts, Florida SunCoast Orchids

Jim Roberts of Florida SunCoast Orchids will talk to us about encyclias and epicatts. His talk is a good introduction to the encyclia species that are easily grown in Florida and some of their notable hybrids that do well for us here. Jim has 10,000 square feet of growing space in three gutter connected greenhouses. He strives to grow and sell the best quality orchid plants, building a lasting reputation in the industry as one of the very best. We will have our normal raffle at the end of the meeting. Friends and guests are always welcome!

When: Tuesday, February 2, 6:30 til 9 pm

Where: Memorial Lutheran Church
3375 US 1 South, St. Aug 32086

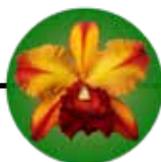


INSPIRATION



Cattleya Schroeder's Catt '#2'

© Terry Botta



CULTIVATION



Orchid Questions & Answers

by Sue Bottom,
sbottom15@gmail.com

Q1. One of my Cattleya flowers looks splotchy. It looks questionable to me, could this be because of a virus or disease?

A1. That sure looks like color break on that orchid, which would suggest Odontoglossum Ringspot Virus or ORSV. It's a shame, cause it's a beautiful flower otherwise. Kiss it goodbye.



Q2. I was reading about fungal problems and noticed that many of my cattleyas have leaves that are becoming mottled. I have attached pictures for examples of what I am seeing. I am concerned that most of my cattleya plants are diseased.



A2. Leaf mottling is typically caused by one of three things:
1 - Scale, turn the leaf over to make sure you don't have the dreaded boisduval scale on your cattleya.
2 - Fungal Infection, turn the leaf over and see if you see tiny dots or blotches of dots, the spores.
3 - Magnesium deficiency, which is what I suspect you have and what I had for many years.

Our water is very magnesium deficient and most fertilizers do not contain magnesium. Magnesium is an essential component of chlorophyll, that's what turns the leaves green. During extremes of heat and cold, the chlorophyll can degrade and give you that mottled appearance. I add magnesium sulfate, Epsom salts, to my fertilizer solution. Some people apply it in the spring and fall, others apply it monthly. I give mine Epsom salts every time I fertilize, which is every time I water. If you use 1/4 tsp/gal fertilizer, add 1/4 tsp/gal Epsom salts at the same time. The only caveat is you can't mix Epsom salts with a concentration solution of CalMag fertilizer, but with a CalMag fertilizer you shouldn't have to add supplemental magnesium.

Q3. I have a giant Dinema polybulbon mounted on cork. It was outside all summer, but now that it's in the greenhouse, I realize that the cork is inhabited by something that is creating copious tiny castings. I've got a new piece of cork, and I guess I can re-mount the plant, but I'm worried that the critters will move into the new cork with the plant, and also move into my other mounts. I found info about steaming and baking the cork, but I can't do that with the plants on it!

A3. That looks like frass from dry wood termites. You might try soaking the mount for an hour in a strong solution of imidacloprid, say double strength. That's not the strength they use to treat foundations, etc. for termites, but it's probably as strong as you'd want to try with your orchids. I don't think the termites will go after your plants, but of course you don't really want a colony of termites anywhere close to your house.



CULTIVATION



What's Wrong with My Orchid?

by Dr. Courtney Hackney

There is an old joke among seasoned orchid hobbyists that the best growers are the ones that have killed the most orchids. It is also obvious that those that grow orchids as a hobby are also extremely persistent and do not accept failure. Most people that acquire an orchid or two give up when

their orchid does not grow and bloom right away. A plant that does not grow and flower when placed on a windowsill, however, likely challenges those reading this column.

Each time I visit a hobbyist, both new and experienced, there are always a few plants brought out with a request of "what is wrong with this plant". Occasionally, the answer is obvious when scale or mealybugs can be seen under leaves. Most of the time, however, my answer is a best guess based upon what the plant is telling me. Limp leaves on a phal suggest that there is a problem related to water. Mushy media with the plant say that the plant has lost its roots. Crusty deposits of salt on the surface of dry media tell the story of too little water or water containing high levels of solids in the water. More than half of the plants presented to me fall into one of these categories.

Often such plants were purchased from the plant sections of large stores, but such plants also come from orchid nurseries as well. Many times I am told that the ailing orchid was growing among many others that were prospering while this one was not. How can this be, is the usual admonition.

All orchid plants are not created equal. Some grow and flower better than others under similar conditions. Experienced growers often forget that they sold or traded some of their first orchid acquisitions; plants that grew well, but were less than ideal when it came to flower quality.

Mericlones or hybrids from proven parents generally replace those discarded plants. The fact that these new plants did not prosper under the same conditions confuses the orchid hobbyist. Commercial growers have known this for many years and solve the dilemma by discarding plants growing poorly under their conditions. Even chance tetraploid phal seedlings may be discarded because they grow more slowly. It is difficult to watch dozens of orchid seedlings being thrown into a garbage can. The nurturing gene in most orchid hobbyists is alive and well and wants



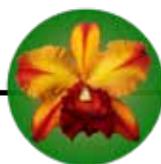
to save every single orchid plant. Save your growing space for orchids that grow well under your conditions. Do not be afraid of trying new types of orchids, but be willing to throw away failures.

Well-grown orchid plants have a sort of momentum, an excess of energy when the plant is storing more sunlight and nutrients than it is using. A new plant in this condition placed in your growing area has energy to allow it to adapt to its new conditions or to flower. Once an orchid has flowered some of that momentum is lost. The same loss of momentum occurs when an orchid is repotted, moved into new growing conditions, is attacked by scale, etc. It may take many years to get that momentum back into a plant once it is lost. Diseases, especially viruses, use a plant's resources and prevent it from growing as fast as it might. Such plants may never regain their momentum, but will linger for many years taking both space and your time.

Many mericlones available in the market today harbor such viruses, but do not show any signs. As soon as the plant flowers or is moved into less than ideal conditions, the momentum is lost and the virus catches up. Suddenly, such plants grow more slowly and show virus symptoms where none existed before.

Orchids that grow poorly challenge hobbyists. Indeed, the purchase of hard-to grow species and hybrids is what keeps orchidists fascinated by the hobby. As you learn about each type of orchid do not be afraid of discarding a clone that has ceased to be vigorous. You may be able to bring it back in a couple of years, but it is easier to get a new plant and begin again using the knowledge gained on the last one. That is what makes a good orchid grower.

Note: Dr. Courtney Hackney wrote a monthly column of his orchid growing tips for about 20 years; we are reprinting some you might have missed, this one from January 2004.



CULTIVATION

A Small Warm Growing Area Under Lights

by A'na Sa'tara, [An Essence of Orchids](#)

Winter in our house is a time of reckoning for Phalaenopsis roots. For several years, I struggled with a “boom” and “bust” cycle in my growing of Phals — expansive root growth, leaves, and flowering, followed by a winter decline and a cycle of repotting to clean up decaying roots.

I'm writing this article to describe my growing area solution, which has been tweaked over a couple seasons to something that works quite well, and has expanded my ability to house warmer growing orchids in our cooler home. (A second part of the solution for the Phals, switching to a low P-K fertilizer, is described in [another article](#).)

It took me awhile to figure out the annual issue with the Phalaenopsis, since they are reputed to be such easy growers and good orchids for the home. I didn't have this problem with other orchids, even as I was just starting to get serious and learn about more genera.

Well, I finally had the epiphany: the problem was my commitment to cutting greenhouse gas emissions. Translated: by saving energy with a winter nighttime temperature in the house of 57F, the roots were getting just too chilly. Our other orchids didn't blink, but these temperatures sure made the Phals unhappy for three months or so of the year.

With another winter looming, and at last recognizing the detrimental temperatures, I decided to create a dedicated “warm” growing area for the Phalaenopsis, as well as a more hospitable indoor environment for my warmer growing Paphiopedilums and a small vandaceous orchid. My initial inspiration was my husband's vegetable seed starting station, a stack of 48" long shelves under fluorescent lights.

While the shelves were too close together in his setup, the [same company](#) manufactured a two shelf version (see photo), with a distance of about 25" from the lights to the tray. At the time, we debated between purchasing the fully integrated unit (frame, shelves, lights) or building our own. A mid-winter 20% discount tipped the balance in favor of the purchase rather than the DIY. However, in the future, I would make my own unit, having enough experience with this setup.

The four key design features. Four components have made this unit REALLY work well for orchids. So, no matter where you start for your frame and lights, these are the parts that I would like to share to enhance any indoor setup under lights.

Seedling heating mats. These are the fundamentals of the growing area: extra heat for the roots. Hydrofarm makes a long, narrow heating pad (48"x12") that fits on shelf for a



Top shelf of the growing area, with mounted and potted orchids

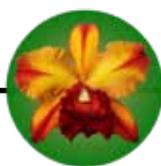
2-3 fluorescent light ballast, which is what I am using here. They also make wider 48" mats, if you are using more lights.

I have a thermostat for each of the shelves, which I set at 70F. The temperature sensor is taped to an inverted ceramic custard cup, about 3" above the bottom of the tray. I am aiming]to measure the temperature at the level of the middle of the pots. The heating mats turn off during the day, when the combination of room heating and extra heat from the lights increases the air temperature to 70-75F. At night, the heating mats run all night, and successfully maintain the root area at 60-62F.

Humidity trays. Initially, I set the pots directly onto the heating mats. Which worked adequately, except that the pots would dry out very quickly — every 2-3 days even in sphagnum moss. It was challenging to keep even moisture, and the smaller pots (3-4") would desiccate in a day or so while the larger (5-6") pots were still moist. I was watering very frequently, and it was much more convenient to be able to water the pots while sitting on the tray, rather than constantly carrying orchids to the sink. However, they would be standing in water afterwards. No good.

The solution? Cut custom humidity trays from the “egg-crate” plastic grids sold for ceiling lighting at Home Depot. They are only about 1/2" high, but enough to keep the pots out of the water. The pots are still close enough to the mats to stay warm, but not in direct contact. Comparing one winter without the humidity trays, and subsequent years with them, the results with the humidity trays are much better. The moisture levels are even (watering every 5-7 days) and it is more amenable to keep mature, larger Phals in Orchiatea bark (to reduce repotting frequency compared to sphagnum moss).

Continued on page 9



CULTIVATION

Continued from page 8

In the summer, I remove the heating mats and just use the humidity tray on the shelf. Summer in California is the dry season, and creates the most [humidity challenges](#). I will often fill the shelf tray with enough water to keep it just below the top of the humidity tray and the pots out of the water. I found if I left the heating mats in the tray, water would collect underneath and get rather yucky.

Small fan. Each shelf has its own small 1.5W USB powered fan, which runs all day with the lights. It is positioned on the top third of the shelf height, to maintain a constant light airflow over the orchids. Even though the unit is fully enclosed in plastic (with an open mesh top and slits on ends), I have had no problem with the air quality. It has been adequate for a Pleurothallipsis and Dryadella which also share the space, and are known for their preference for good air movement.

I am using the tiny plastic USB fans sold as personal desk fans, designed to plug into a computer. One \$7 fan has run for about 5,000 hours without failing. There are larger clip fans, but these are a bit much power for a small enclosed space. If I did not have the unit enclosed in plastic, then I would consider one of these instead.

Hanging bars for mounts. This was an unintended but exciting feature of the frame! I discovered that I could hook standard greenhouse “S” hooks around the top bar and ends, creating an elevated area for mounted orchids or hanging pots. Nearly doubling the growing space!

An eclectic group of warmer growing mounts have had great growing success here, with two species Phals, several Kefersteinia, the pleurothallids mentioned above, and Dendrobium aberrans. Since they are closer to the lights, it did take a little adjustment (and a few purple leaves) to get the height right for each orchid.

I have never seen an indoor orchid shelving unit setup like this for mounts — I urge you to give it a try. It makes watering quite easy as the shelf tray catches the overflow and it becomes the day’s water to evaporate for extra humidity.

Notes on lighting. A few final notes on the setup. During the winter, I run the lights for 11 hours/day. For the summer, the maximum is 14 hours/day with tapering up/down during the spring and autumn.

I am currently using high intensity T5 fluorescent bulbs. Just this past week, I discovered that there are now LED bulbs which retrofit into a T5 fixture; I will be investigating them as replacements for the future. Additionally, while these fixtures have the capacity for three bulbs for even more light, I actually only use two bulbs. I tried (twice) with three bulbs, but it was too much light for the Phals.



Group of Paphiopedilums (and a Dendrochilum smithianum) growing under fluorescent lights for the winter on a humidity tray in my “winter warm” area

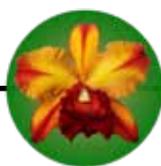
While my lights are adjustable in height, I have never lowered them from the highest position for the top shelf. As noted above, I haven’t seen a need for the Phals, some of which have turned a bit purple from light levels near their tolerance threshold (even white flowered hybrids). All of them are flowering and growing strongly. Which is fortunate, because it would be difficult to lower the mounts and undesirable to increase their light exposure. I might increase light for the Paphiopedilum on the second shelf; these photos were taken just after they moved onto the shelf and I wanted to let them adjust to the new growing environment (they spend the summer and autumn outside).

I hope that my experience supports you in designing an optimal growing area for your orchids. With just four feet of space in a wide hallway, I was able to create an excellent warm growing area for a few dozen orchids, potted and mounted. As you can see in the top photo, vigorous plants and many Phalaenopsis flower stalks are the reward for the effort!

UPDATE: We have created a dedicated warm growing area, for Paphiopedilum seedlings, and the Phalaenopsis and Paphiopedilum in this article have happily re-located there. I have left this article as-is, since it contains excellent experience with growing warm-loving orchid species without a dedicated warm room or greenhouse. Also, I have made the transition to using T5 HO LED light replacements for the fluorescent fixtures: [click here](#) to read the extensive article on my experience.

Related Articles & Photographs

- [LED lights for orchids: our Paphiopedilum seedling growing area](#)
- [The Indoor Sun: Growing orchids under high intensity LED lights](#)
- [More than footcandles and lux: new ways to think about indoor orchid growing with LED lights](#)
- [A new lighting option for indoor orchid growing: T5 HO LED replacements for fluorescent grow lights](#)



CULTIVATION

Bacterial vs. Fungal Infections

by Sue Bottom

One of our newsletter subscribers from India sent in a picture of his cattleya, asking for help. It had ugly black streaks on the newest leaves and he wondered how he might save it. It looked like a very severe bacterial infection, so we recommended removing the discolored leaves, apply a copper fungicides and praying to the Orchid Gods. Mukesh took his plant to the plant pathology department at a local agricultural college nearby where he lives in India. They examined the leaf under microscope and confirmed it is a bacterial infection. They recommended removing the infected leaves and then spraying and drenching the plant with 250 ppm streptocycline and 3gm copper oxychloride/litre water. After twice a week sprays, Mukesh send a picture of his cattleya on the road to recovery.

Mukesh posted the picture on the American Orchid Society's Facebook page and got a variety of opinions as to the problem: virus, fungus and bacterial infections as well as recommendations to either toss the plant or apply a systemic fungicide/bactericide. Of course, with the possible exception of Aliette, there is no systemic bactericide and many fungicides are ineffective on bacterial infections. Clearly there is much misunderstanding as to diagnosing whether a problem might be fungal or bacterial in origin, and how each type of problem should be approached.



Before – Cattleya with Severe Bacterial Infection

After – Plant Sanitized and Treated

Orchids can be attacked by both fungi (like *Cercospora* and *Colletotrichum*) and bacteria (like *Pseudomonas* and *Erwinia*). Bacterial soft and brown rot caused by *Erwinia* (now called *Pectobacterium*) is easy to diagnose from its foul odor and water soaked appearance, while bacterial leaf spotting can be difficult to distinguish from a fungal infection absent a laboratory test. A bacterial infection proceeds much more quickly than a fungal infection. Bacteria are

single cell organisms that release enzymes to dissolve plant cell walls in order to feed on the nutrients inside. This causes a rapid collapse of host cell tissue, often resulting in sunken spots. Bacteria do not produce fruiting bodies, so if you see fine dotting on the leaf surfaces, you would suspect a fungal rather than bacterial infection.

Bacterial infections require different treatment than fungal infections. Per Uchida:

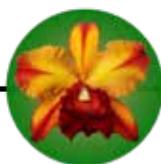
There are several important reasons for the lack of success in using chemicals to control diseases caused by bacteria or viruses. Although both fungi and bacteria are extremely small or microscopic in size, they differ tremendously from each other. Fungi are more closely related to flowering plants than they are to bacteria. Like plants, fungi have many membrane structures inside of them which allow them to process food, grow, reproduce, and survive. These membranes are destroyed by fungicides. Thus, many chemicals have been developed to destroy fungi by interfering with membrane functions. Low/moderate doses of these chemicals are relatively harmless to the plants they are designed to protect. Bacterial pathogens are formidable foes. They are more "primitive" than fungi and have few structures inside their cells. They have a small amount of genetic material, as compared to fungi or plants. The membranes in the fungi that are destroyed by chemicals are not present in bacteria. Thus, spray applications of fungicides generally have no effect on diseases caused by bacteria. Dipping plants in a fungicide bath will kill fungal pathogens, but will spread bacterial pathogens to all plants in the bath.

The most important cultural control for foliar bacterial diseases is eliminating the presence of water on leaves. This can be difficult for plants grown exposed to rainfall or during the seasons when water condenses on leaves in the early morning. As Ann Chase wrote (2013):

*Even if you have done everything possible with cultural controls, you may still find use of a bactericide necessary. Many bactericides have been tested over the past 30 years on a wide variety of pathogens and plants. Bacteria can rapidly develop resistance to many active ingredients (especially copper and antibiotics), and rotating between different mode-of-action groups is crucial. Even after 30 plus years, very few bactericides are available, and the majority of them contain copper. Streptomycin sulfate is also used in some parts of the United States, especially for prevention of fire blight or *Erwinia* soft rot.*

Copper-containing products including Camelot

Continued on page 11



CULTIVATION

Continued from page 10

O, Kocide, Nordox and Phyton 27 (or Phyton 35) have been consistently effective in most trials. Work at the University of Florida Mid-Florida Research and Education Center by Dr. David Norman has indicated very good control of Xanthomonas leaf spot on geranium with coppers (Kocide 3000, Camelot, Cuprofix and Phyton 27) and mancozeb (Protect DF).

A more recent product that has shown benefits in controlling bacterial leaf spots is Cease (originally sold as Rhapsody), which is a biological control (Bacillus subtilis). Trials with Cease shown good efficacy against Pseudomonas and Xanthomonas leaf spots on bedding plants and cut flowers. The most effective rate has been 1 percent preventively or 1.5 percent to 2 percent if symptoms are present.

In the past few years, we have also found a product called KleenGrow to be very effective for leaf spots (Pseudomonas and Xanthomonas) and soft rot (Erwinia) in many trials. This quaternary ammonium bactericide is as effective in many trials as copper.

Use cultural controls to make sure your bactericide dollars are effective. Alternating between your favorite copper product and Cease or Kleengrow has been a good way to control leaf spots caused by bacteria.

Copper products have long been used to fight bacterial infections, but dendrobiums and many thin leaved orchids are sensitive to its toxic effects. For these, peroxides and quaternary ammonium products can be used. Bacterial flower blighting often happens during periods of extended wet weather. Standard bactericide products can cause floral damage so perhaps using one of the antibiotics like Agri-Mycin would be helpful, similar to how it is used on tomato and pome crops.



Bacterial blighting on Fredclarkera flowers after a period of extended rainfall during the fall months



Bactericides will damage the flowers, so perhaps the antibiotic Agri-Mycin might be used instead

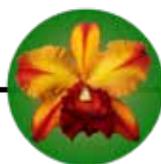
Citations and Additional Reading

Chase, Ann R., Battling Bacterial Leaf Spots, Greenhouse Product News, March 2013, Accessed 12/6/20: <https://www.greenhousemag.com/article/gm0313-managing-bacterial-leaf-spots/>

Chase, Ann R., Bactericides for Ornamentals in 2013, Greenhouse Product News, December 2012, Accessed 12/6/20: <https://gpnmag.com/article/bactericides-ornamentals-2013/>

Chase, Ann R., Bacterial Leaf Spots and Blight, Greenhouse Product News, April 2019, Accessed 12/6/20: <https://gpnmag.com/article/2019-update-bacterial-leaf-spots-and-blight/>

Uchida J., 1995, Bacterial Diseases of *Dendrobium*, Research Extension Series, Vol 158. Institute of Tropical Agriculture and Human Resources. University of Hawaii



A Couple of Cheap Tricks

Happy Roots

by Phil Jesup

My wife, Ann, should be writing this because the orchid lecture innovations I'll be describing were both her ideas. However, as of this writing in late September 2010, I've finished processing my plants (ours is a "his and hers" collection) back into the greenhouse after their outdoor summer vacation, and she hasn't completed hers; therefore, only I have a bit of time on my hands.

Staying Upright. Have you ever become frustrated trying to stabilize a sympodial orchid (one with rhizomes) in a wood-slat basket, particularly if it doesn't have much in the way of roots? Metal pot clips, normally the solution to the "wobblies," can be used only with pots. I used to tie the growths to the wire basket hanger with fishing line, but that involved more time and effort than it was worth, and often didn't do the job well enough to stabilize the plant. I had to pull it in several different directions with the ties, in effect a tug of war.

The solution devised by Ann; insert one or more bamboo shish kebab sticks (about \$1.99 for a package of many sticks at a supermarket) between the top two slats of the basket, running the stick over the rhizome and pressing it firmly against the medium. The ends of the sticks may protrude in unsightly fashion, but can be clipped off flush with the basket. By the time the stick has rotted, the plant is usually well-established and rooted in and on the basket. We've been doing this for some years now, and found it fail-safe.

Moisture Retention. A few years ago, we purchased a roll of 1/2-inch-thick rug padding. This is normally used under rugs in one's home, but our purpose was to spread it on the wire and wood-frame greenhouse benches to divert the dry heat rising in the winter from the finned tubing under the benches. It was porous, but stayed damp for a while after watering, and therefore was an aid to keeping up the humidity as well. After a while, we noticed that, in some cases, roots had ventured through the pot drainage holes and traveled through and into the padding so that when one picked up a pot it was attached to the pad. That gave Ann the idea of using a small swatch of padding tied just below mounted plants to provide more moisture to exposed roots. In the past, we had used a pad of sphagnum moss, but it tended to dry too fast and ultimately disintegrate. The padding was inorganic, and seemed to remain moist a little longer.

It worked. The first plant Ann experimented with, an *Encyclia candollei*, was long established on cork; after two years with its rug padding it needs watering less often, and has produced noticeably longer and more heavily branched



Rootless backbulb division of Cattleya percivaliana 'Summit', AM-FCC/AOS, held in place with shish kebab stick until roots, which are now evident, were produced.

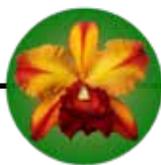
inflorescences. New roots grew under, through, into, out of and back into the padding with abandon. And roots, to us, are often more exciting than flowers. We have subsequently used this technique on other mounted orchids of all sorts, with excellent results.

Despite my misgivings, Ann then began experimenting with using tightly packed rug padding shards as a potting medium in relatively small (so far) clay pots. The shards are inserted vertically, as were chunks of osmunda fiber in the old days. So far, so good—the roots seem to benefit from it, and because it is inorganic, it does not rot. Nevertheless, as with any potting medium, it seems wise to repot such plants. We're now lining baskets with padding so that standard mixes don't fall through, and the latest trick is to use chunks of it as the medium itself in baskets.

Clearly the cost isn't as cheap as shish kebab sticks, because you have to buy a rug-sized roll, but perhaps one could cadge a free supply of scraps from retail rug sellers, not an illogical concept. A 6 x 9-foot roll costs 61 cents a foot locally, which is about \$32 per roll. The padding is easy to cut with scissors, or you can simply pull off pieces or little chunks; it tears readily. Some padding has a backing on one side of a network of thin plastic film, and if so it's easily removed before use with orchids. Another trick of this new trade: the padding that is manufactured of a conglomerate of rather garish mottled colors, but if you spread it out in strong sunshine for about three days, it bleaches to an acceptable greenish background color; if you don't bleach it before use, algae will eventually do the same job.

While the padding appears extremely useful, we're not going whole hog yet, particularly with using it as a potting mix. It always pays to take it slow and experiment over time.

This article appeared in the American Orchid Society Orchids magazine in January 2011 (Vol.80:1, pp.40-41).



SHOW TABLE



Grower Brandon Silvester
Bc. Tainan Gold 'Canary' AM/AOS



Grower Debra Brandt
Lc. Santa Barbara Sunset



Grower Shelia Nathanson
Asctm. aurantiacum



Grower Suzanne Susko
Neostylis Lou Sneary 'Bluebird'



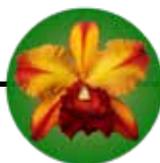
Grower Leslie Brickell
Bulbophyllum Fantasia



Grower Sue Bottom
Cochleanthes Amazing



Grower Shelia Nathanson
Bc. Island Stars



SHOW TABLE



Grower Leslie Brickell
Blc. Exotic's Perfection 'Pink Cloud'



Grower Sue Bottom
C. Nancy Off 'Linwood' AM/AOS



Grower Linda Stewart
Pot. Dogashima Paradise



Grower Glo MacDonald
Rhrds. Bangkok Sunset



Grower Allen Black
Barkeria skinneri



Grower Courtney Hackney
C. percivaliana alba 'Sonja'

Link to all Pictures. <https://flic.kr/s/aHsmTtQxUt>

